



FIG. 9

TENSILE COMPARISON - 33 gm/m² SAMPLE - AFTER ENTANGLING STEPS

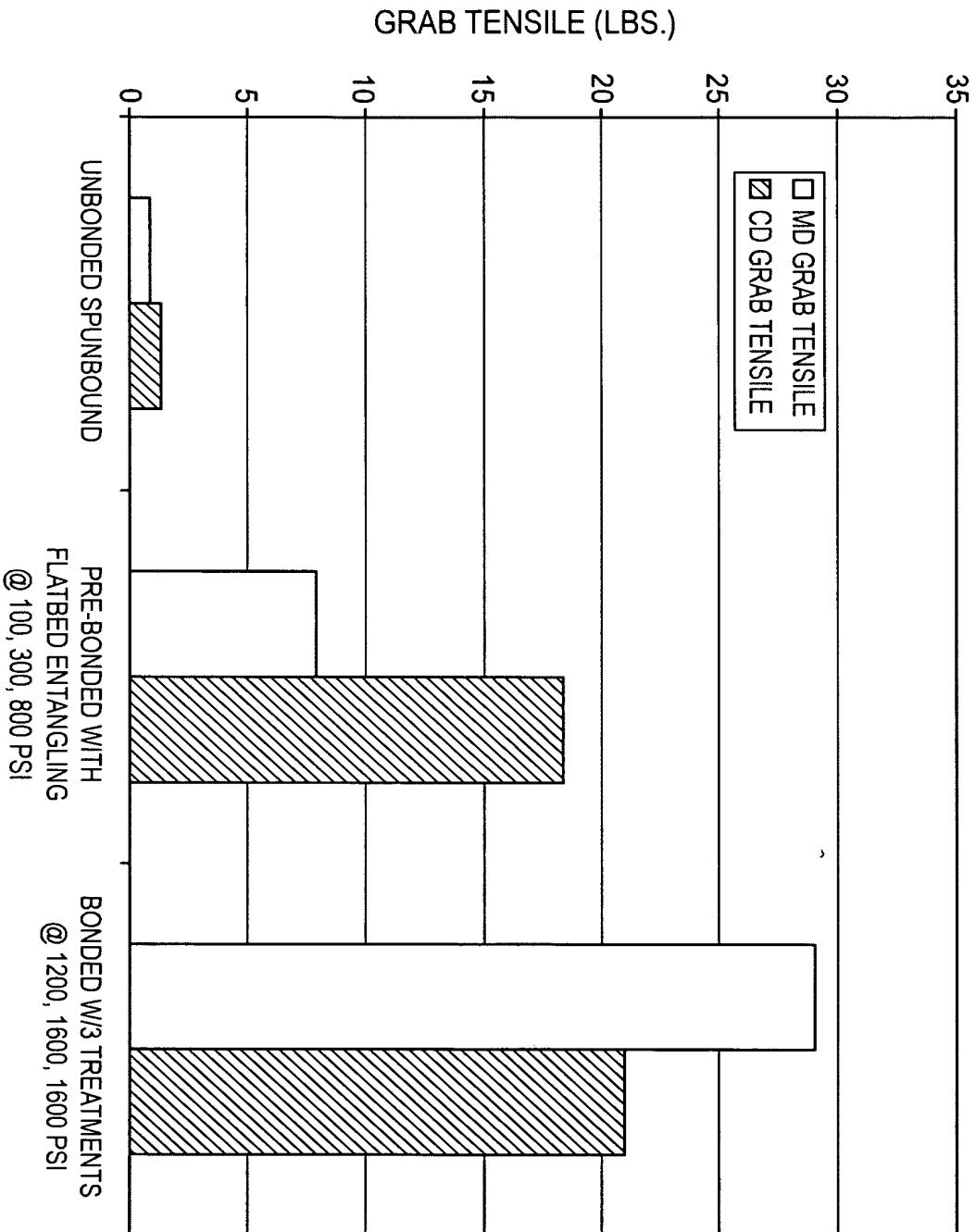


FIG. 10

COMPARISON: 132 gm/m² SAMPLES TREATED TWO AND FOUR TIMES

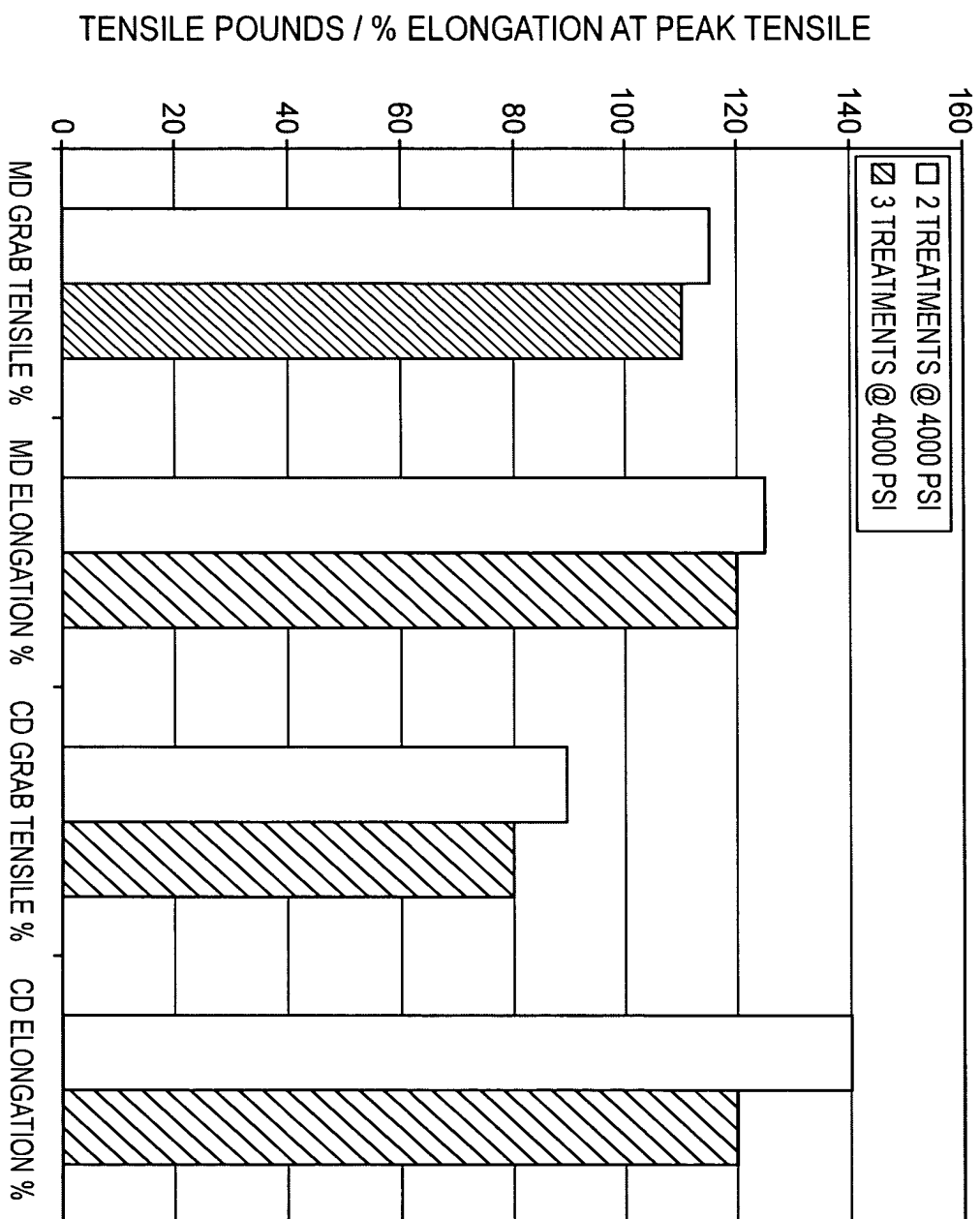


FIG. 11

TENSILE COMPARISON: 68 gm/m² ENTANGLED AND PATTERNED -
PP STAPLE FIBER VS. PP FILAMENT WEB

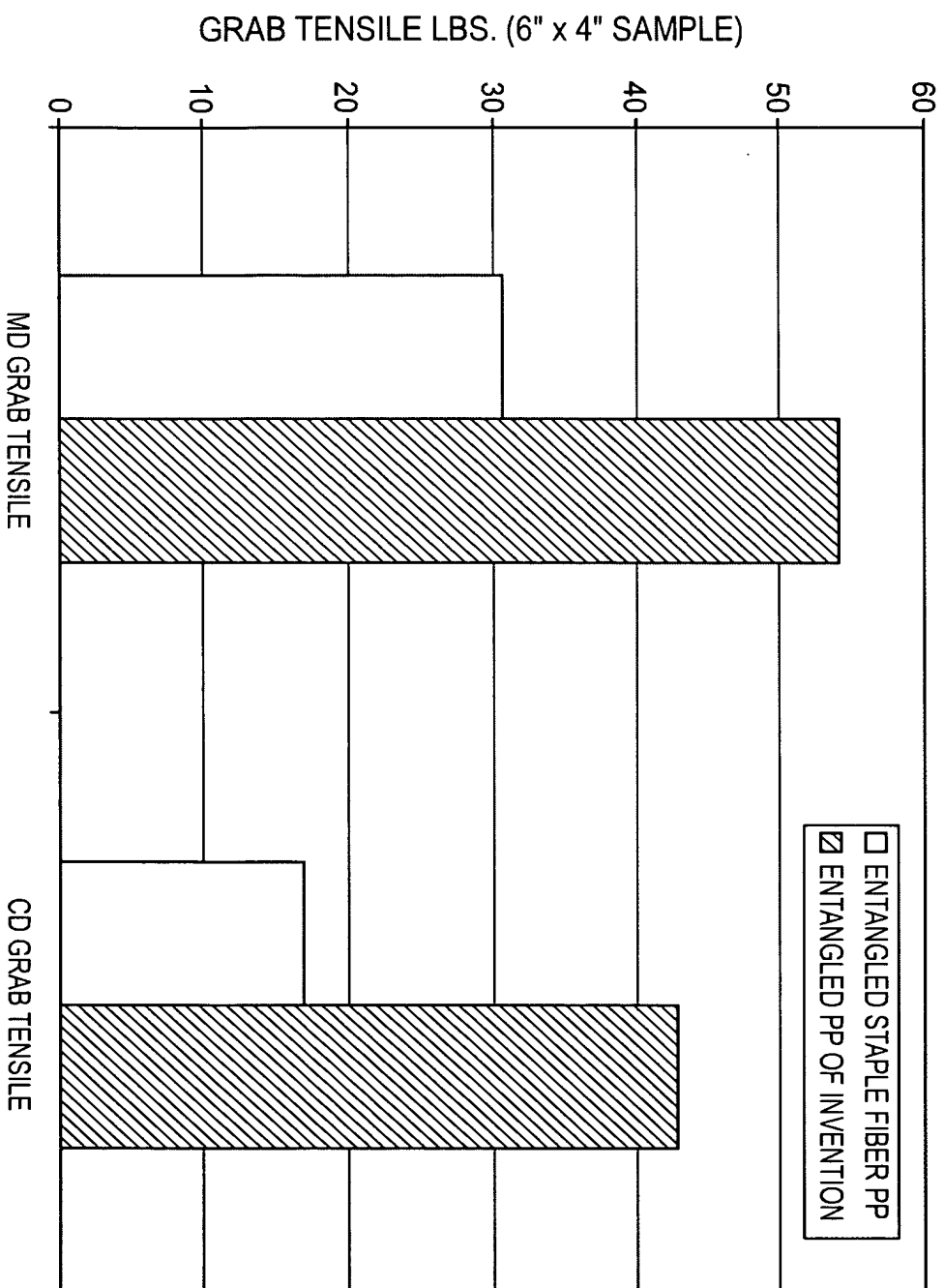


FIG. 12

TABLE I:
Spinlace™ Fabric Analysis
Fabric properties vs. Control Fabrics

ID	type	basis weight	denier	water jets process/pattern	jet pressures						total energy HP-hr/lb.	Entanglement		Fiber interlock	Grab Tensile		Tear Trap		Abrasion cycles	Strip Tensiles, #		Elongation		Density g/cm ³
					1	2	3	4	5	6		completeness	frequency		CD	MD	CD	MD		CD	MD	CD	MD	
W	TBCW	34	2									1.04	45.43	9.66	10	22	3	9	54	1	5	58	49	0.14
X	TBCW	68	2									0.98	52.03	19.15	25	37	7	15	18	4	7	52	51	0.45
106	Spinlace	34	1.67	flatbed & roll	100	1200	1200	800	1600	1600	1.1	0.85	34.40	46.29	29	50	16	25	40	4	13	118	117	0.06
401A	Spinlace	34	1.67	Apex 33x28	100	1600	1600	1600	1600	1600	1.6	1.17	11.86	45.22	40.42	81	116	55	5	2.9	4.9	137	120	0.17
103	Spinlace	68	1.67	flatbed & roll	100	1600	1600	1600	1600	1600	0.7	1.18	9.72	41.30	21.34					6	14			0.08
402A	Spinlace	68	1.67	tricot sleeve	100	1600	1600	1600	1600	1600	0.7	1.10	9.91	35.13						5.8	6.6			0.06
102	Spinlace	68	3	flatbed & roll	100	1600	1600	1600	1600	1600	1.9	1.10	13.38	19.70						2.1	4			0.05
402C	Spinlace	68	3	tricot sleeve	100	1600	1600	1600	1600	1600	0.5	1.12	13.81	20.19						2.4	8.2			0.07
302	Spinlace	100	3	flatbed & roll	100	1600	1700	1700	1700	1700	1.9	1.13	14.22							4.37	5.8			0.07
403B	Spinlace	100	3	NCSU sleeve	100	1600	1700	1700	1700	1700	1.9	1.13	14.22							4.5	6.3			0.07
Y	SB	34	1.67									0.98	103.89	37.33	24	47	4	9	36	3	10	39	37	0.15
Z	SB	68	1.67									0.79	26.36	32.46	32	51	14	24	10	3	8	33	20	0.52
201	HET	34	2.2	flatbed & roll	100	600	1200	800	1600	1600		0.58	19.07	17.42	10	20	5	11	28	1	5	127	103	0.05
401B	HET	34	2.2	Apex 33x28	100	600	1200	800	1600	1600		1.15	15.33	21.09						1.01	2.35			0.06
204	HET	68	2.2	flatbed & roll	100	600	1200	1600	1600	1600		0.96	17.45	22.21	42	56	6	16	5	3	8	128	111	0.18
402B	HET	68	2.2	tricot sleeve	100	600	1200	1600	1600	1600		1.13	19.54	25.93						2.9	3.8			0.06

notes
TBCW = thermally point bonded carded webs
Spinlace™ fabric = water jet entangled continuous filament webs
SB = thermally point bonded spunbond
HET = hydroentangled carded staple fiber webs